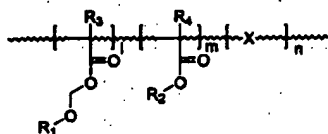


What is claimed is :

1. A polymer for use in a chemically amplified resist, the polymer being represented by the following formula I:

Formula I



wherein  $R_1$  is an alkyl group having 1 to 30 carbon atoms;

$R_2$  is hydrogen or an alkyl group having 1 to 30 carbon atoms;

$R_3$  and  $R_4$  are independently hydrogen or a methyl group;

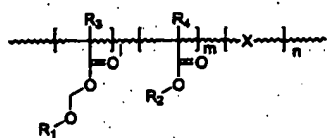
$X$  is vinyl ether derivative, styrene derivative, or olefin derivative; and

$l$ ,  $m$  and  $n$  are a repeat unit of the polymer, wherein  $l$  is 0.05 to 0.9,  $m$  is 0 to 0.7, and  $n$  is 0 to 0.7.

2. The polymer as claimed in claim 1, wherein the polymer represented by formula I comprises a monomer having a repeat unit  $l$  in an amount of at least 5 % of the total monomer content of the polymer.

3. A chemically amplified resist composition comprising a copolymer of at least one polymer represented by the following formula I, a photoacid generator, an additive, and a solvent:

Formula I



wherein  $R_1$  is an alkyl group having 1 to 30 carbon atoms;

$R_2$  is hydrogen or an alkyl group having 1 to 30 carbon atoms;

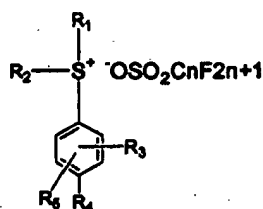
$R_3$  and  $R_4$  are independently hydrogen or a methyl group;

$X$  is vinyl ether derivative, styrene derivative, or olefin derivative; and

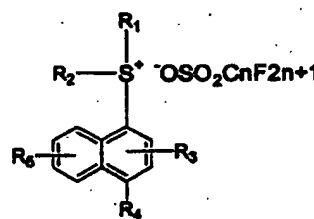
$l$ ,  $m$  and  $n$  are a repeat unit of the polymer, wherein  $l$  is 0.05 to 0.9,  $m$  is 0 to 0.7, and  $n$  is 0 to 0.7.

4. The chemically amplified resist composition as claimed in claim 3, wherein the photoacid generator comprises at least one compound represented by the following formulas II and III:

Formula II



Formula III



and

wherein  $R_1$  and  $R_2$  are independently alkyl, allyl, perfluoroalkyl, benzyl or aryl;

$R_3$ ,  $R_4$  and  $R_5$  are independently hydrogen, alkyl, halogen, alkoxy, aryl, thiophenoxy, thioalkoxy or alkoxy carbonyl methoxy; and

n is an integer ranging from 1 to 8.

5 5. The chemically amplified resist composition as claimed in claim 3, wherein the photoacid generator is contained in an amount of 0.3 to 10 parts by weight based on 100 parts by weight of the solid content of the chemically amplified resist composition.

6. The chemically amplified resist composition as claimed in claim 4, wherein the photoacid generator is contained in an amount of 0.3 to 10 parts by weight based on 100 parts by weight of the solid content of the chemically amplified resist composition.

7. The chemically amplified resist composition as claimed in claim 3, wherein the polymer represented by formula I is contained in an amount of at least 3 % of the chemically amplified resist composition.

15 8. The chemically amplified resist composition as claimed in claim 3, wherein the polymer represented by formula I comprises a monomer having a repeat unit I in an amount of at least 5 % of the total monomer content of the polymer.

20 9. A patterning method comprising exposing the chemically amplified resist composition according to claim 3 using a radiation selected from ultraviolet(UV), X-ray or electron beam.